Imaging complex spin structures of magnetic nanostructures by spin-polarized STM

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Within the past decade spin-polarized scanning tunneling microscopy (SP-STM) was developed to a mature technique which not only allows for ultra-high spatial resolution studies of magnetic nanostructures, but also enables the direct correlation with the sample`s topography and the spin-resolved electronic structure. By reviewing the main achievements of SP-STM, which include atomic resolution of antiferromagnetic monolayers and the direct observation of thermal switching events of individual superparamagnetic entiies, we will discuss the strength and limitations of the technique. Recent results on the imaging of complex, so far inaccessible non-collinear spin structures in domain walls and spin spirals will be discussed.